REMARKS

Claims 46-120 remain pending. Previously examined claims 46-52, 54-58, 60-65, 67-73, 84, 86-87, 89, 92-95, 97-103, 105-109, 111-113, and 118 were rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,689,128 to Hshieh et al. (hereinafter Hshieh '128); and claims 53, 59, and 74-83, 85, 88, 90-91, 96, 104, 110, and 119-120 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hsheih '128 in view of USPN 6,204,533 to Williams et al. (hereinafter "Williams '533"). Reconsideration of the claims in view of the comments below is respectfully requested.

As an initial matter, it is noted that in the response mailed February 9, 2005, Applicants presented amendments to the drawings as well as the specification in response to objections raised by the Office Action of August 10, 2004. The current Office Action does not sustain those objections and Applicants therefore understand that those amendments were entered and were found to adequately address the objections. Applicants respectfully request that the Examiner acknowledge and confirm this understanding.

With respect to the substantive rejections, Applicants note that the current Action reiterates the same rejections based on the same references as in the original Action without specifically addressing the remarks presented in the response of February 9, 2005. In an attempt to clarify the Examiner's position on the distinguishing features described in the response of February 9, 2005, the undersigned conducted an examiner telephone interview on July 20, 2005. During this telephone conference, the Examiner maintained that the arguments presented by the Applicant were unpersuasive, and that more specifically, with respect to the "abrupt junction" feature of the claimed transistor, such feature in inherently taught by Hshieh '128. Applicants respectfully traverse this rejection.

All claims 46-96 include the limitation of a "heavy body region" that forms an "abrupt junctions" in a "doped well." This forms one of the bases that distinguishes these claims over the cited art. With respect to this specific feature, the rejection states:

> If should be noted that even though the cited reference [Hshieh '128] does not mention the function of the heavily doped region as abrupt junction. However, the cited art discloses a structure of the device that is identical with the instant application's device. Therefore, the cited device is capable of performing functions and properties as currently claimed.

Applicants respectfully submit that as provided by the MPEP [2112 IV], for a prior art reference to inherently disclose a missing descriptive matter, the examiner is required to provide objective evidence or cogent technical reasoning to show that the missing descriptive matter is *necessarily* present in the device described in the reference. "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Onter. 1990) (emphasis in original).

The only technical reasoning provided by the rejection in support of the inherency allegation is that "the cited art discloses a structure of the device that is identical with the instant application's device." However, not only none of the structures disclosed by Hshieh '128 is identical to the instant application's device as previously explained by the Applicants, even if they were, there is no reason to believe that the specific junction as claimed (or any other junction in any of the Hshieh '128 devices) would necessarily be "abrupt."

First, as to whether any of the Hshieh '128 structures is identical to that of the present invention, Applicants respectfully submit, once again, that all three embodiments described by Hshieh '128 (and depicted in Figs. 1, 2, and 3) have structural features that are not

only different but that those very different features are the crucial aspects of the Hshieh '128 devices that provide the purported improvements. Specifically, Hshieh's Fig. 1 embodiment has a "P+ deep body region" (16) that is deeper than the well (14) and the trench (24). Col. 3, lines 1 *et seq.* Hshieh's Fig. 2 embodiment has a "P+ deep body region" (36) that is deeper than the well (14) and extends into "a second (upper) epitaxial layer (drift region) 34." Hshieh '128 therefore teaches in Fig. 2 using P+ deepy body region in a device with a "double epitaxial layer (drift region) structure." Col. 2, lines 63 *et seq.* In Fig. 3, Hshieh '128 discloses the same double epitaxial structure without any deep P+ body region. Col. 4, lines 14-23. These structural features - all of which are different from the device of the present invention - are intended to address the problem of destructive breakdown due to concentration of electric fields near trench corners. See, *e.g.*, Hshieh '128, col. 1, lines 25-41; col. 2, lines 14-18; and col. 4, lines 17-24.

In contrast to the teachings of Hshieh '128, the present invention neither employs a P+ region that is deeper than the trench, nor a double epitaxial layer. Instead, the present invention employs, in one embodiment, a heavy body region (34) that is shallower than the trench (26) and forms an abrupt junction inside the well region (36). Thus, the structure of the device of the present invention is clearly not identical to any of the structures shown by Hshieh '128. There is therefore no objective evidence or cogent technical reasoning to support the conclusion of inherency.

Furthermore, as described in the present application, the improvement in breakdown voltage for the transistor is in part due to the abrupt nature of the junction between the heavy body and the well. See, *e.g.*, page 6, lines 29 *et seq.* of the application as filed. Hshieh '128 attempts to improve the exact same characteristic (breakdown voltage), yet it teaches three structures that are distinctly different: P+ deep body that is deeper than the trench (Fig. 1), and addition of a buried epitaxial layer (34) with a P+ body that is deeper than the body (14)(Fig. 2), and with a P+ body that is shallower than the body (14)(Fig. 3). Hshieh '128 therefore does not even contemplate the use of abrupt junctions to improve breakdown and one of ordinary skill in

the art reading Hshieh '128 would not recognize that any of the junctions disclosed by Hshieh '128 would necessarily be abrupt to improve breakdown.

Hshieh '128 therefore does not inherently disclose the use of abrupt junctions because there is no objective evidence or cogent technical reasoning that would lead one of ordinary skill in the art to believe that the structures disclosed therein necessarily have abrupt junctions. All claims 46-96 are therefore patentably distinguished over the cited art for at least this one reason. Other grounds for patentability for many of these claims were presented in the response of February 9, 2005, and will not be repeated here.

With respect to independent claim 97, this claim does not expressly recite an "abrupt junction." Claim 97, however, does characterize the structure of the junction as follows: "the doped heavy body region having a region of high dopant concentration near the junction with the doped well and a region of relatively low dopant concentration near the surface of the substrate." The rejection does not address this feature of the claim that, among others, distinguishes over the cited art. To the extend that the rejection applies the inherency argument to claim 97 as well, Applicants traverse that rejection in the same manner as claim 47. That is, for substantially the same reasons that Hshieh '128 fails to inherently disclose an abrupt junction, it fails to inherently disclose a "doped heavy body region having a region of high dopant concentration near the junction with the doped well and a region of relatively low dopant concentration near the surface of the substrate." Claims 97 to 120 are therefore patentably distinguished over the cited reference for at least this one reason.

As to those claims that have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hshieh '128 in view of Williams '533, Applicants respectfully submit that the combination fails to teach or suggest the claimed invention. As explained above, Hshieh '128 fails to disclose or suggest, expressly or inherently, a transistor having, in combination with the other elements recited in the rejected claims, a doped heavy body region that forms an abrupt

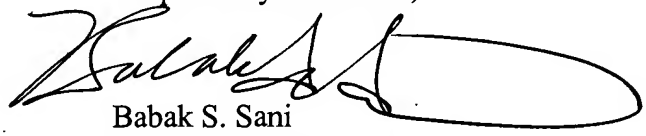
junction inside a doped well. Applicants submit that Williams '533 does not in any way cure this deficiency of the cited reference. In fact, similar to Hshieh '128, Williams '533 attempts to address the same problem of protecting the transistor from destructive breakdown with yet another, significantly different, structure. Williams '533 teaches forming "deep diffusion at periodic intervals throughout the cell lattice" to protect the gate oxide layer against breakdown voltages. See, *e.g.*, col. 3, lines 10-14. Thus, Williams '533 also teaches away from the claimed structure for a transistor with the recited doped heavy body junction. Additional distinguishing grounds for many of the claims were addressed in the response of February 9, 2005, and will not be repeated here. All rejected claims, therefore, are patentably distinguished over the cited references.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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